

REMARKS

Objection to Drawings

The drawings were objected to under 37 CFR 1.83(a) because the “retention portion” in claim 3 is not allegedly shown in the drawings.

The term “retention portion” has been amended to “fixing member.” The “fixing member” is shown as reference numeral 5 in Fig. 2. Thus, the objection has been overcome.

Rejection under 35 USC 103(a)

Claims 1, 2, and 6 were rejected under 35 USC 103(a) as being obvious over Taneda et al (US 6,218,658) in view of Beyer (US 5,191,167).

Claim 1 has been divided into claim 1 and claim 7. Also, these claims have been amended to clearly distinguish over the prior art.

Taneda et al is a reference referred to in the present specification as Patent Publication 2: Japanese Patent No. 3,169,885. The optical fuse disclosed by Taneda et al is designed such that a medium for causing a light loss is inserted into an optical line. In Taneda et al, the medium includes a material in which an irreversible change is to be induced in response to excessive light.

In the structure of Taneda et al, the medium is arranged at a position where the medium transmits entire light coming along the optical line, and the optical fuse function is achieved based on an increase in insertion loss of the medium to be caused by an excessive light input.

This structure has an inherent disadvantage of large insertion loss because the irreversibly-changeable material has relatively high light-absorbance capacity. According to present invention, the medium need not generate heat or ignite, but the light-absorbing body generates heat or ignites to cause the irreversible change of the medium.

Beyer discloses an ignition system and method for providing multi-point simultaneous ignition to energetic materials from a single robust optical fiber. The primary application is to the ignition of explosives and propellants. In Beyer, the transmitted light is not confined in the center of fiber optics 12, but the light is repeatedly reflected on the outer surface of the fiber optics 12 and portions of the light energy leak out and are absorbed to ignite the sensitive material 17. Beyer does not deform or destroy a portion of the fiber optics.

The Examiner alleged as follows:

The motivation of combining Beyer with Taneda is mentioned at column 1, lines 11-16 of Beyer (i.e., for use in explosives or propellants). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 1 and 6 in view of Taneda combined with Beyer.

Beyer describes at the portion cited by the Examiner as follows:

1. Field of Invention

This invention relates to an ignition system and method for providing multi-point simultaneous ignition to energetic materials from a single robust fiber optic. Primary application is to the ignition of explosives and propellants.

(Beyer, column 1, lines 11-16).

However, despite the Examiner's allegation, the ignition of explosives and propellants is not in the analogous field of an optical fuse. The Examiner is simply applying the teaching of the present invention to the prior art, which is an impermissible hindsight analysis.

Moreover, Beyer is not applicable to optical fuse of Taneda et al. In Taneda, the light is confined in the optical waveguides. In contrast, according to Beyer, the transmitted light is not confined in the center of fiber optics 12, but the light is repeatedly reflected on the outer surface of the fiber optics 12. This makes it possible for portions of the light energy to leak out and to ignite the sensitive material 17. Therefore, the light confined in the waveguide of Taneda et al cannot ignite the sensitive material 17 of Beyer.

Thus, Taneda et al and Beyer do not teach or suggest, among other things, **“a light-absorbing body** adapted to absorb a portion of said light and **generate heat** to cause irreversible change to said medium by increased heat generation of said light-absorbing body when light intensity passing through said medium exceeds a critical light intensity, **said light-absorbing body contacting at least a portion of an outer peripheral surface of said medium** in such a manner as to allow a part of light emitted from said light-emitting end into said medium to reach said light-absorbing body,” as recited in claim 1.

Also, Taneda et al and Beyer do not teach or suggest **“a light-absorbing body** adapted to absorb a portion of said light and ignite to cause irreversible change to said medium when light intensity through said medium exceeds a critical light intensity, **said light-absorbing body contacting at least a portion of an outer peripheral surface of said medium** in such a manner

Amendment under 37 CFR §1.111
Application No. 10/578,773
Attorney Docket No. 052911

as to allow a part of light emitted from said light-emitting end into said medium to reach said light-absorbing body,” as recited in claim 7.

For at least these reasons, claims 1 and 7 patentably distinguish over Taneda et al and Beyer. Claims 2 and 6, depending from claim 1 also patentably distinguish over Taneda et al and Beyer for at least the same reasons.

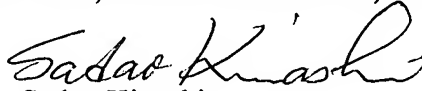
In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants’ undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Sadao Kinashi

Attorney for Applicants

Registration No. 48,075

Telephone: (202) 822-1100

Facsimile: (202) 822-1111

SK/ar